and (iii) of clause (a) of new claim 22 comes from the paragraph bridging pages 12 and 13 of the specification. Support for clause (c) of new claim 22 comes from lines 18-20 of page 11 of the specification. The remaining new dependent claims 23-42 correspond respectively to original dependent claims 2-21, except that the dependency has been changed in the new dependent claims so that each depends back to new independent claim 22 or to the appropriate intervening new dependent claim. Due to incorporation by reference, the amended language now in the new independent claim 22 is also a requirement of each of the new dependent claims 23-42. The Examiner is respectfully requested to enter the amended language for the claims.

First in the Official Action, the Examiner stated that the title is not descriptive and requested a new title. Applicant respectfully declines, as the present title is clearly indicative of the claimed invention.

Next in the Official Action, the Examiner rejected all of claims 1-22 under both the first and second paragraphs of §112.

More specifically, the Examiner indicated that the specification does not appear to show any working examples, but appears to provide only hypothetical statements of what would occur. Furthermore, the Examiner commented that Applicant has not shown by what mechanism, theoretical or otherwise, that administration of sodium chloride results in reduction of HIV infection.

Applicant respectfully points out that the U.S. Patent Laws contain no requirement for actual working examples, and that therefore, prophetic examples are acceptable. The reason is that the filing of an application constitutes a constructive reduction to practice of the invention.

Applicant's specification and prophetic examples are clearly sufficient to teach the person of ordinary skill in the art how to make and/or to use the invention. Applicant has clearly set out in his specification and prophetic examples what Applicant believes to be his invention, namely administration of sodium chloride to a HIV infected person in order to achieve alleviation of the HIV infection.

More particularly, as clearly set out in new independent claim 22 above, the gist of the present invention is to administer a sodium chloride formulation to a HIV infected person where the amount of sodium chloride is more than the person's average daily intake, but is less than the toxic amount which would, of course, kill the person. Periodically repeating the administration of this amount of sodium chloride achieves alleviation of the HIV infection.

Although Applicant does not intend to be bound to any theory, Applicant believes the following describes the mechanism of his invention. The administration of extra sodium chloride beyond the average daily intake will be enough to disrupt the HIV virus, which is relatively small in size as compared to the size of human cells, but not enough (i.e., less than the toxic amount of sodium chloride) to disrupt the relatively larger human cells. Because of the relatively small size of the HIV virus, it should be ruptured by a change in osmotic pressure resulting from dehydration of the viral cell by extra sodium chloride in an amount that is more than the average daily intake, but that is still less than the amount needed for rupturing the larger human body cells by a change in osmotic pressure resulting in dehydration. In other words, the amount for rupturing human cells is the toxic amount as measured by TCLo or as measured by LD50, and the extra sodium chloride always is to be kept less than this toxic amount.

The size difference between the relatively small HIV virus and the relatively large human cells is well known to those of ordinary skill in the art of medicine, immunology, and the like.

For the Examiner's convenience in understanding the size difference, enclosed as an illustration is a Merck brochure entitled "Livin'It" describing their drug CRIXIVAN® for treatment of HIV infection. The first two pages of this brochure have a drawing that shows the small HIV virus in red attached to the large human cell in blue.

Further in connection with the rejections under §112, the Examiner stated in the Official Action that:

> Applicant indicates that the administration should result in circulating levels of NaCl within the range of about 0.05 uM to about 1.0 uM, however, Examiner takes official notice that the normal serum concentration of sodium is 136-145 mEq/L and the normal serum concentration of chloride is 98-106 mEq/L and that less than 135 mEq/L of sodium can eventually lead to seizures and coma (See generally Drug Facts and Comparisons (54th Ed., 2000), pg. 116; Martindale (30th Ed., 1993), pg. 862).

Applicant respectfully submits that the point is Applicant indicated a low bottom limit and a high upper limit for what should be the range in a HIV infected person being treated. Applicant's specification does not state this range is intended to refer to the range of what is "normal" in a healthy person, nor does Applicant's specification state this range is a requirement.

More specifically, for a clearer understanding, Applicant has converted all measurements to mg/L. Thus, Applicant's circulating level of NaCl within about 0.05 μM to about 1.0 μM for what Applicant stated should be the range in a HIV infected person, when calculated for sodium,

converts to about 0.00115 mg/L to about 0.023 mg/L. On the other hand, Martindale's concentration of 136 mEq/L to 145 mEq for what is normal in a person for sodium converts to 0.00313 mg/L to 0.00335 mg/L. Accordingly, the "normal" sodium range is a small range inside what Applicant stated should be the sodium range in a HIV infected person who is being treated.

Applicant respectfully notes that the circulating range of sodium for a HIV infected person being treated can vary widely. Some HIV infected persons are very ill. They will not have a normal level of sodium. The HIV infected person may be electrolyte-deprived and in a coma and thus may have a very low sodium level. Also, as the HIV infected person is being treated, it would be undesirable for the HIV infected person to have an extremely high sodium level, as the toxic amount would be approached.

More particularly in connection with the amount of sodium being administered to the HIV infected person, Applicant respectfully notes that, as is clearly set out in independent claim 22 above, the HIV infected person is monitored for about 1 month to determine his/her average daily intake of sodium chloride, and then, the HIV infected person is administered more sodium chloride than the average daily intake where the extra amount achieves alleviation of the HIV infection, but is insufficient to reach the toxic amount as measured by TCLo and LD50. Since the TCLo and LD50 are now set out in new independent claim 22, and since the dependent claims require these toxicity levels due to incorporation by reference, the amended language traverses the Examiner's additional rejection in connection with §112 regarding that these toxicity levels were essential elements that had been omitted from the claims.

However, with regard to the Examiner's last comment in the §112 rejection vis-à-vis the amount of selenium, Applicant respectfully points out that the specification does <u>not</u> state that the amount of selenium must be under 200 mcg per day, but only that the amount of selenium <u>should be</u> under 200 mcg per day. Therefore, Applicant respectfully declines to insert a maximum dosage amount of selenium into new independent claim 22.

Accordingly, Applicant respectfully requests the Examiner to withdraw all of the rejections of claims 1-21 under both the first and the second paragraphs of §112.

Next in the Official Action, the Examiner rejected all of claims 1-21 under §103 (a) as being obvious over Martindale in view of Principles and Practice of Infectious Diseases and

further in view of the prior art acknowledged in the specification, namely the Morton Salt Product Data.

The Examiner indicated that Martindale teaches that sodium chloride is used in the treatment of extracellular volume depletion, dehydration, and sodium depletion which may occur during gastroenteritis. It is also taught that sodium chloride is used for oral rehydration in acute diarrhea. The Examiner further noted that Principles and Practice of Infectious Diseases teaches that the incidence of gastroenteritis in HIV patients is high and that HIV infection is associated with diarrhea. The Examiner then stated that both the Morton Salt Product Data and Drug Facts and Comparisons teach availability of sodium chloride, i.e., respectively that food grade salt contains sodium chloride and that commercially available are tablet forms of sodium chloride (including a slow release form with 410 mg sodium chloride).

The Examiner concluded that since it is known from the prior art that HIV infected persons typically are electrolyte depleted, including sodium chloride depleted, that therefore it would have been obvious to the person of ordinary skill in the art to modify the prior art so as to administer sodium chloride periodically to the metabolism of persons having HIV infection.

Applicant respectfully points out that the invention is not simply to administer sodium chloride periodically to HIV infected persons in order to replace their depleted sodium chloride. Rather, the invention is to administer a therapeutically effective amount of sodium chloride to the HIV infected person so that achieved is alleviation of the HIV infection.

Furthermore, applicant respectfully points out, as is well known from the case law on obviousness, the Examiner must consider the invention as a whole. The HIV infected person is monitored for about one month to determine the average daily intake and administered more sodium chloride than that average daily intake, but less than TCLo and LD50, the toxic amounts, so as not to kill the HIV infected person by administration of extra sodium chloride. The point is not simply to alleviate the person's electrolyte depletion, including sodium chloride depletion, induced by the HIV infection.

As stated above, while it is not intended to be bound to any theory, Applicant's theory is that the extra sodium chloride will be a large enough amount of sodium chloride to rupture the relatively small HIV virus, but not a large enough amount of sodium chloride, i.e. the toxic amount as measured by TCLo and LD50, to rupture the relatively large human cells.

Applicant's invention is not simply to achieve alleviation of electrolyte depletion in a HIV infected person, but rather to achieve alleviation of the HIV infection. This is not taught or suggested by any of the references taken either alone or in any combination whatsoever. Applicant respectfully notes that the Examiner can come up with Applicant's claimed invention only from reading the subject application which is a hindsight type of argument, and as is well known, hindsight is impermissible in an obviousness determination under any subparagraph of §103.

Accordingly, Applicant respectfully requests the Examiner to withdraw the rejection of claims 1-21 under §103(a).

CONCLUSIONS

By the above amendments and remarks, Applicant respectfully submits that the present invention as now claimed is enabled by the specification in such a way as to convey to the person of ordinary skill in the art that Applicant had possession of the claimed invention and in such a way as to teach a person of ordinary skill in the art to make and/or to use the invention without undue experimentation. The filing of the application with prophetic laboratory examples is a constructive reduction to practice. Accordingly, Applicant respectfully requests the Examiner to withdraw the rejections of claims 1-21 under both the first and second paragraphs of §112. Moreover, in view of the above amendments and remarks, Applicant respectfully submits that the invention as claimed clearly distinguishes over the references, taken either alone or together, and thus, the Examiner is respectfully requested to withdraw the rejection of claims 1-21 under §103(a). Applicant respectfully submits that the present application is now in proper condition for allowance and respectfully solicits official notification of allowance from the Examiner.

If a minor issue remains outstanding after the Examiner has studied the above amendments and remarks, the Examiner is respectfully requested to telephone the undersigned attorney so that any such matter may be resolved and the application be placed in condition for allowance without the necessity for another Official Action.

DEPOSIT ACCOUNT

Although a check in the amount of $200.00 is enclosed for the Petition fee and it is believed that no further fee is due, the Commissioner is hereby authorized to charge any

deficiencies of payment associated with this Communication, or to credit any overpayment, to Deposit Account No. 13-4365.

Respectfully submitted,

Moore & Van Allen PLLC

Date: May 13, 2002

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JLS/pp
Enclosures:
Merck brochure entitled "Livin'It"
Petition for Two Months Extension of Time
Check in the amount of $200.00 for extension fee